

What is claimed is:

1. An air exchange assembly comprising:

a lower supply duct having a first lower supply duct end and a second lower supply duct end, said first lower supply duct end connected to an external cooling unit;

a bottom cap attached to said second lower supply duct end;

an upper supply elbow mounted on a rotatable plate and connected to said bottom cap creating a first passage from said second lower supply duct end to said upper supply elbow through said bottom cap;

an upper supply duct having a first upper supply duct end and a second upper supply duct end, said first upper supply duct end connected to said upper supply elbow and said second upper supply duct end connected to a device to be cooled;

an upper return duct having a first upper return duct end and a second upper return duct end, said first upper return duct end connected to the device;

an upper return plenum connected to said rotatable plate and connected to said second upper return duct end;

a second passage connected to said upper return plenum;

a lower return plenum connected to said second passage creating a passage from said upper return plenum to said lower return plenum; and

a lower return duct having a first lower return duct end and a second

lower return duct end, said first lower return duct end connected to said lower return plenum and said second lower return duct end connected to the external cooling unit.

2. The air exchange assembly as recited in claim 1 further comprising a slip ring assembly forming part of said first passage.

3. The air exchange assembly as recited in claim 2 wherein the said slip ring assembly is rotatable.

4. The air exchange assembly as recited in claim 1 wherein said second passage is an annular passage.

5. The air exchange assembly as recited in claim 1 further comprising an additional upper return duct and upper return plenum.

6. The air exchange assembly as recited in claim 5 further comprising a third passage for said additional upper return duct and upper return plenum.

7. The air exchange assembly as recited in claim 1 wherein said first passage is an annular passage.

8. A method for directing air flow through an air exchange assembly, the method comprising:

- directing air flow from an external cooling unit through a lower supply duct to a bottom cap attached to the lower supply duct;
- directing air flow up through a first chamber connected to the bottom cap to an upper supply elbow mounted on a rotatable plate;
- directing air flow from the upper supply elbow through an upper supply duct to a device to be cooled;
- directing air flow from the device to be cooled to an upper return duct connected to an upper return plenum mounted on the rotatable plate; and
- directing air flow from the upper return plenum through a second chamber to a lower return plenum and through a lower return duct connected to the external cooling unit.

9. The method as recited in claim 8 wherein the first chamber comprises a slip ring assembly forming part of the first chamber between the bottom cap and the upper supply elbow.

10. The method as recited in claim 9 wherein the slip ring assembly is rotatable.

11. The method as recited in claim 8 wherein the second chamber is an annular passage.

12. The method as recited in claim 8 further comprising directing air flow to an additional upper return duct and upper return plenum.

13. The method as recited in claim 12 further comprising directing airflow through a third chamber to the additional upper return duct and upper return plenum.

14. The method as recited in claim 8 wherein the first chamber is an annular passage.

15. An air exchange assembly comprising:  
a lower supply duct means for directing air flow from an external cooling unit to a bottom cap connected to said lower supply duct means;  
a first chamber means for directing air flow from said lower supply duct means through the bottom cap to an upper supply elbow mounted on a rotatable plate;  
an upper supply duct means for directing air flow from the upper supply elbow to a device to be cooled;  
an upper return duct means for directing air flow from the device to be

cooled to an upper return plenum mounted on the rotatable plate;

a second chamber means for directing air flow from the upper return plenum to a lower return plenum; and

a lower return duct means for directing air flow from the lower return plenum to a lower return duct connected to the external cooling unit.

16. The air exchange assembly as recited in claim 15 wherein said first chamber means comprises a slip ring assembly.

17. The air exchange assembly as recited in claim 16 wherein said slip ring assembly is rotatable.

18. The air exchange assembly as recited in claim 15 wherein said second chamber means is an annular passage.

19. The air exchange assembly as recited in claim 15 further comprising a third chamber means for directing air flow to an additional upper return duct and upper return plenum.

20. The air exchange assembly as recited in claim 15 wherein the first chamber means is an annular passage.